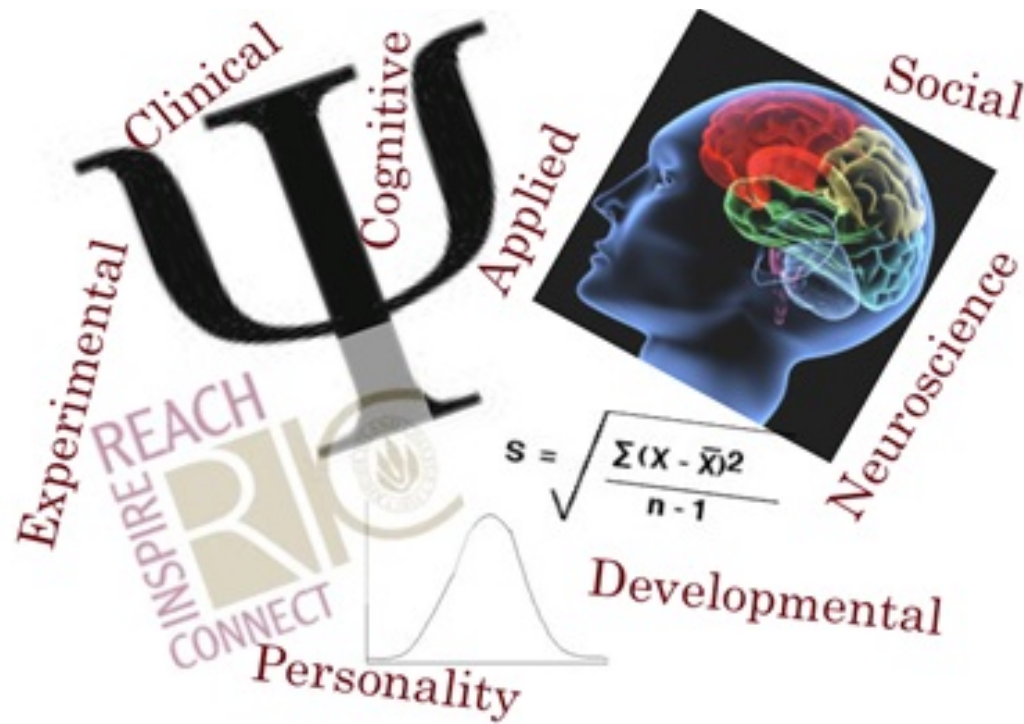


# PSYC202: Research Methods

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# Agenda

- Announcements
- Variables
- Lab 1

# Announcements

- Lab 1 due by next class
  - 2 Pages double spaced
  - Can work on it in class today
- Extra credit!
  - Participate in research
    - More info will be posted on class website

# Variables

- Variable - Event, situation, behavior or characteristic which varies
- Dependent variable – measured output
  - Behavior/outcome due to independent variable
- Independent variable – what you manipulate or compare
  - Given drug or not (manipulate)
  - Left vs. right hand (compare)

# Which of the following is NOT a variable?

- a. Hair color
- b. Inches in a foot
- c. Weight
- d. Attitudes on gun control
- e. Intelligence scores

# Operational definition

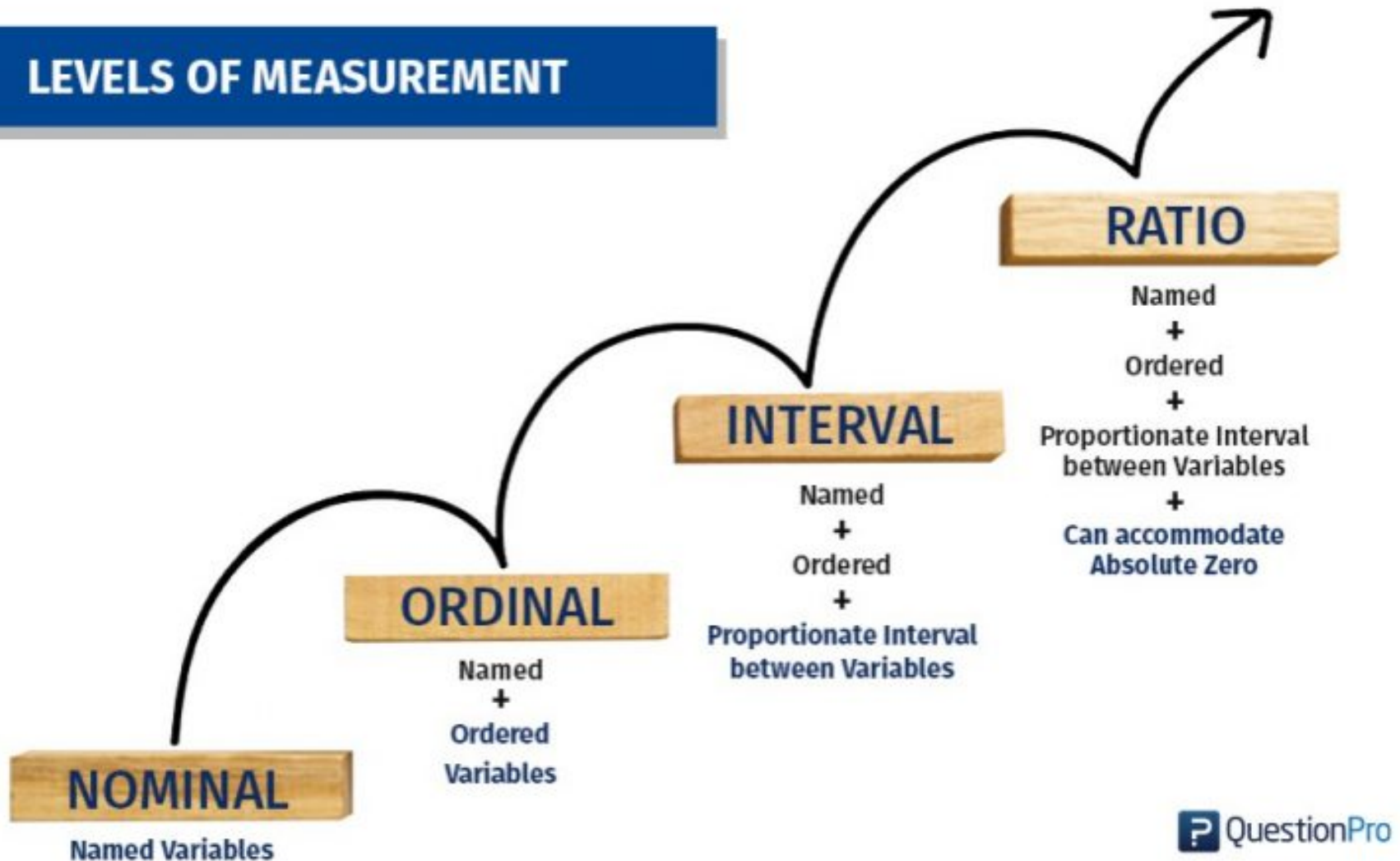
Specifying how variable(s) will be observed and/or measured in a study

- Cognitive performance
  - Reaction time in ms to respond to stimulus
  - Accuracy
- Stress
  - Self report questionnaire, BP, cortisol
- Weight
  - Wt. in lb. using a spring scale with participants fully undressed after 10 hrs. of fasting

# Types of Variables

- *Categorical/nominal scale* – mutually exclusive, non-ordered
  - Sex, what brand of smart phone
- *Ordinal scale* – order matters, but the difference between variables does not
  - Satisfied-unsatisfied ratings
- *Interval scale* – difference between variables matters, but zero does not mean absence
  - Calendar years
- *Ratio scale* – now zero has meaning
  - Distance

# Types of Variables



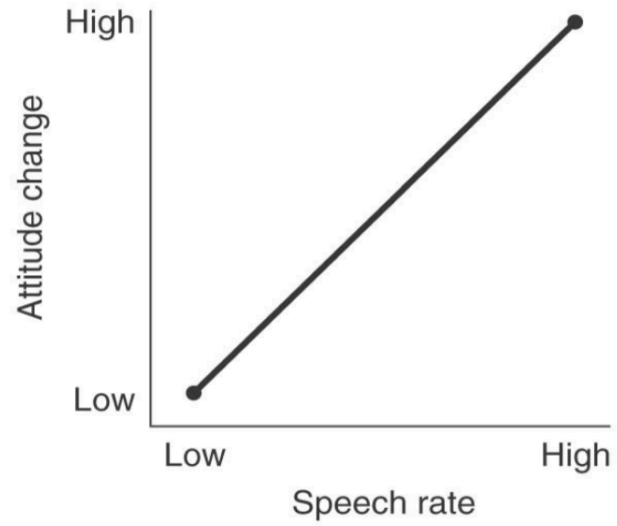


# Relationships between Variables

- Do variables vary systematically together?
  - Ex. As the number of days absent increases, do grades in the class decrease also?
- Cannot be done with nominal data (no order)

**Graph A**

Positive linear relationship



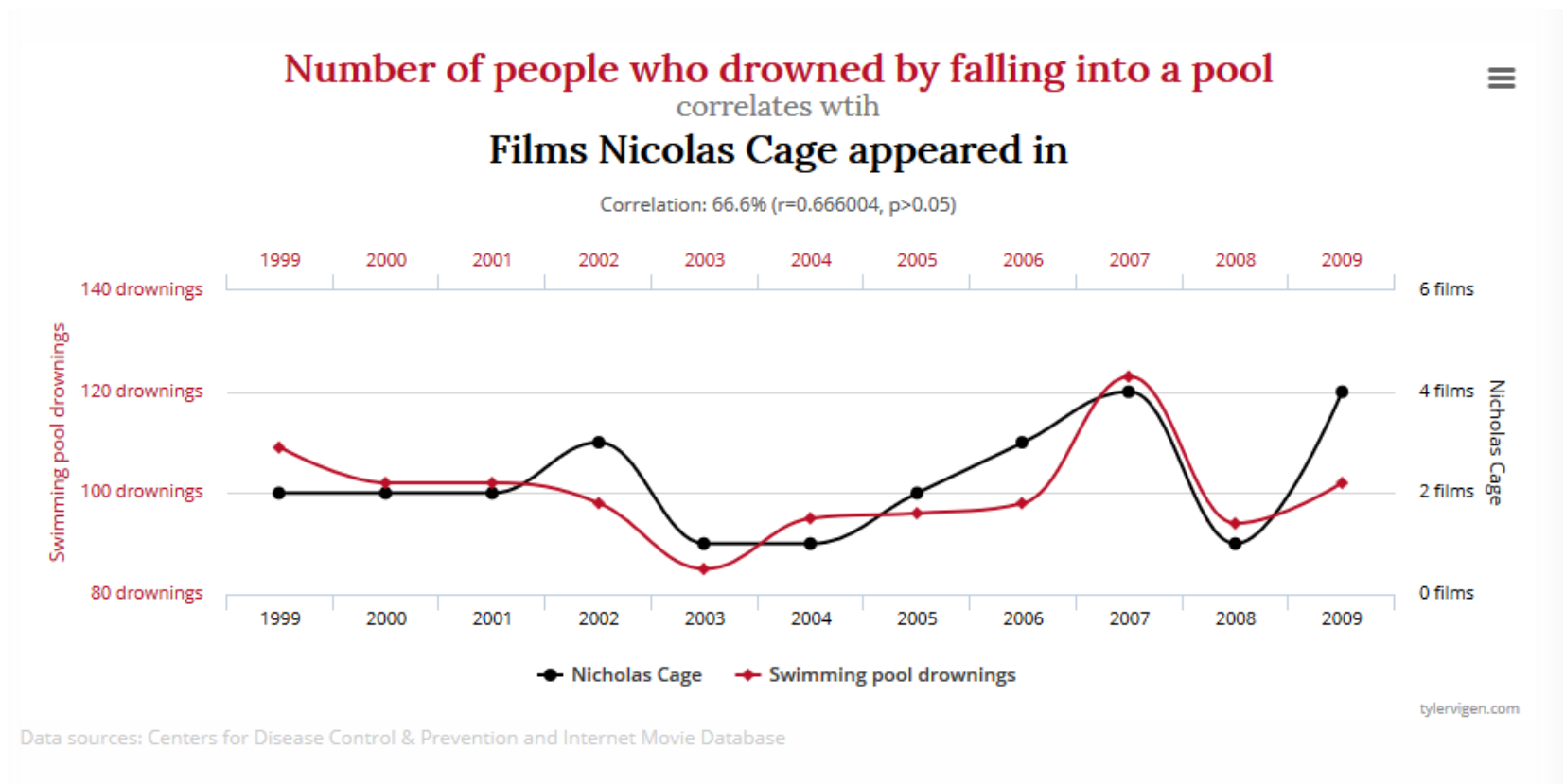
# Cognitive neuroscience methods

- Correlation versus causation



# Cognitive neuroscience methods

## ➤ Correlation versus causation

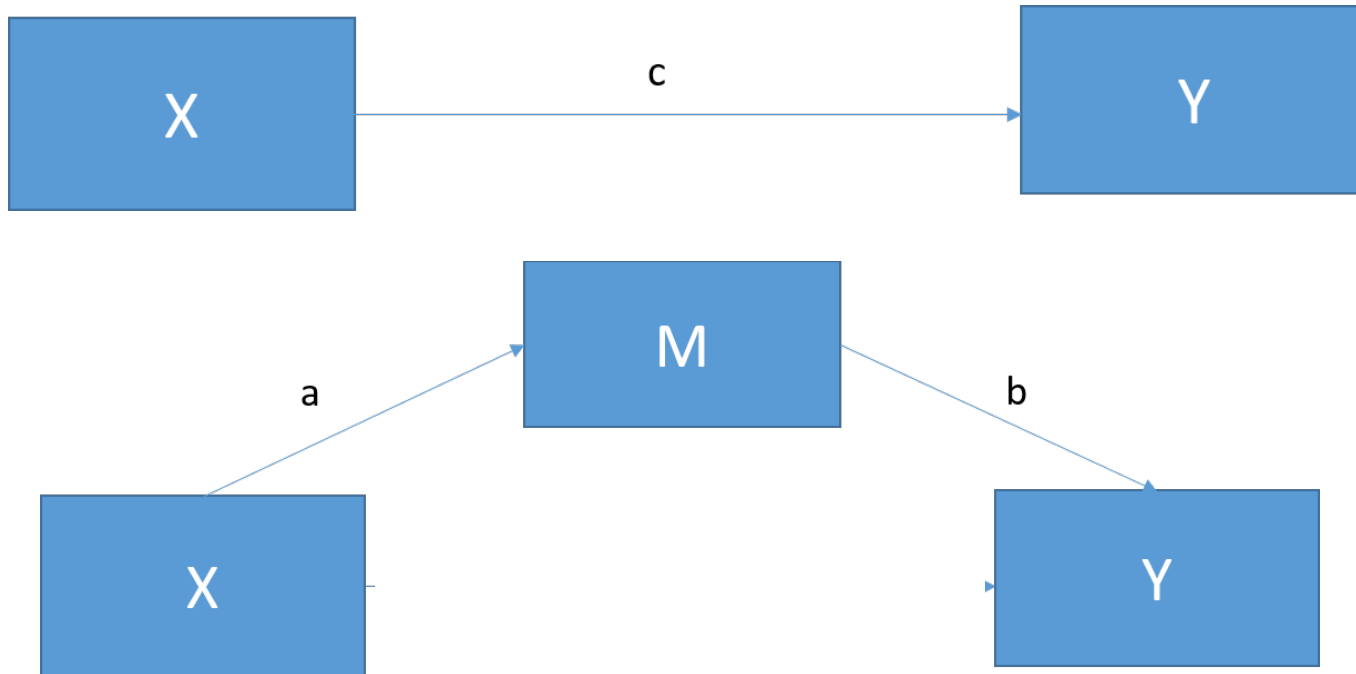


Do Nicolas cage movies *cause* swimming pool drownings?

# Correlation vs. Causation

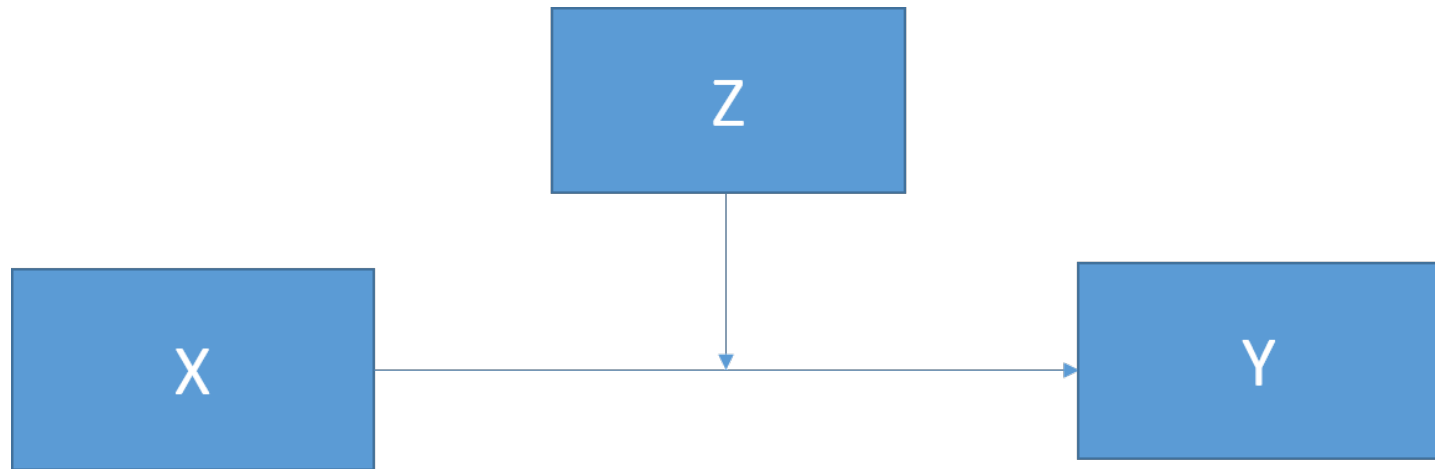
- Correlation – relationship between variables
  - Might be other reasons for the relationship
- Causation – one variable causes another
  - Once you have eliminated all other possibilities

# Mediation



- Mediation – how/why a relationship exists.
  - Mediator is the causal result of X (IV) and causal antecedent of Y (DV)
  - Example:
    - X – grades
    - Y – happiness
    - M – self-esteem

# Moderation



- Moderation – affects the relationship itself
  - NOT the causal result of X
  - Example:
    - X – amount of time studying
    - Y – grades
    - Z – grade level (elementary or college)

# Think, pair, share

- Design a study to test if childhood weight is related to SAT score.
  - Conditions, participants, type of data, possible mediators or moderators
  - Body mass index (BMI), CDC
    - <18.5: underweight
    - 25 – 30: overweight
    - >30: obese
  - SAT: 400-1600



# Lab 1

Sections of a research article: **introduction, methods, results, discussion.**

1. Pull/copy/read one research article (not a review article, not a chapter) from a trusted source from the last five years.
2. Addressing each section listed above in bold, write a two page summary of the article.
3. Using APA format, reference your article at the end of your summary.
4. Use your own words—no quotes.
5. This can be any area of psychology so pick something you're interested in!